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2001-2010: Decade to Roll Back Malaria in Developing Countries, Particularly in Africa

Implementation of General Assembly resolution 66/289 on consolidating gains and accelerating efforts to control and eliminate malaria in developing countries, particularly in Africa, by 2015

Note by the Secretary-General

The Secretary-General has the honour to transmit to the members of the General Assembly the report of the Director General of the World Health Organization submitted in accordance with Assembly resolution 66/289.

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Report of the Director General of the World Health Organization

Summary

The present report is submitted in response to General Assembly resolution 66/289. It provides a review of progress in the implementation of that resolution, focusing on the adoption and scaling-up of interventions recommended by the World Health Organization in 99 countries with ongoing malaria transmission and key challenges impeding progress, including a shortfall in financing for malaria control globally. It provides an assessment of progress towards the 2015 global malaria targets, including Millennium Development Goal 6, targets set through the African Union and the World Health Assembly and goals set through the Global Malaria Action Plan of the Roll Back Malaria Partnership. It elaborates on the challenges limiting the full achievement of the targets and provides recommendations to ensure that progress is accelerated up to and beyond 2015.

I. Introduction

1. While malaria is an entirely preventable and treatable disease, ongoing transmission continues to affect 99 countries and territories around the world, inflicting a tremendous burden, especially on countries in sub-Saharan Africa. In 2010, approximately 3.3 billion people were at risk of malaria globally and 219 million (154 million-289 million) cases are estimated to have occurred. The disease killed an estimated 660,000 (490,000-836,000) people, mostly children under 5 years of age in sub-Saharan Africa. The World Health Organization (WHO) recommends a multipronged strategy to control and eliminate malaria, including vector control interventions, preventive therapies, universal diagnostic testing, treatment with quality-assured artemisinin-based combination therapies and strong malaria surveillance.

2. The present report highlights progress and challenges in the control and elimination of malaria in the context of General Assembly resolution 66/289. It draws on recent reports produced by WHO and on contributions made by the Office of the Special Envoy for Malaria, the African Leaders Malaria Alliance, the United Nations Children's Fund (UNICEF) and the Roll Back Malaria Partnership. The analysis is based on data received from malaria-endemic countries and from a range of malaria control partners.

3. During the past decade, malaria received worldwide recognition as a priority global health issue and the global malaria landscape changed dramatically. A steep rise in international funding enabled malaria-endemic countries to vastly expand their malaria control operations. Owing to a concerted international effort to scale up interventions, an estimated 1.1 million lives were saved and the upward disease spiral was reversed.

4. Since 2001, the General Assembly has passed a resolution on malaria every year, focusing the world's attention on challenges faced by endemic countries, especially in Africa. Early in 2008, the Secretary-General called for universal coverage of at-risk populations with malaria interventions and appointed a special envoy for malaria to mobilize global support for action against the disease. In 2009, a coalition of African Heads of State and Government established the African Leaders Malaria Alliance, pledging to work together to end malaria deaths. In 2013, 49 African Member States were working together under the auspices of the Alliance. Malaria has also been at the forefront of the Five-Year Action Agenda of the Secretary-General, covering the period 2012-2017, and has prominently featured in the "Every woman, every child" initiative, which aims to save the lives of 16 million women and children between 2010 and 2015.

5. In addition to the Global Fund to Fight AIDS, Tuberculosis and Malaria, which has provided approximately 60 per cent of all international funding for malaria, substantial bilateral funding has been made available by the Governments of the United Kingdom of Great Britain and Northern Ireland and the United States of America. In addition, the Bill and Melinda Gates Foundation, UNICEF, the World Bank, the International Drug Purchase Facility and the Governments of Australia, Canada, France, Japan, Monaco, Norway, the Russian Federation and Spain, among others, have also actively supported the global effort to control and eliminate the disease.

6. Although international funding increased substantially between 2004 and 2011, enabling the distribution of more than 400 million insecticide-treated nets and an expansion of diagnostic testing and treatment services, global funding targets to achieve universal coverage of malaria interventions have not been fully met. In recent years, the shortfall in international financing has slowed progress and increased the likelihood of resurgences and epidemics in areas in which the disease had previously been controlled. Malaria continues to affect the world's poorest countries, where millions of people continue to lack access to preventive interventions and health services providing quality-assured diagnostic testing and life-saving treatment.

Global goals and targets

7. The success of efforts to control and eliminate malaria is measured through progress towards a set of global goals and targets, which have been designed through intergovernmental processes or set in the context of global initiatives. There are four main sets of global malaria goals and targets for 2015: Millennium Development Goal 6; targets set through the African Union (the declaration and plan of action on the "Roll Back Malaria" initiative adopted at the Extraordinary Summit of Heads of State and Government of the Organization of African Unity, held in Abuja on 24 and 25 April 2000); targets set through the World Health Assembly; and goals set by the Roll Back Malaria Partnership through the Global Malaria Action Plan. Additional regional and subregional targets for malaria control and elimination are not addressed herein.

8. Malaria prevention and control forms part of Millennium Development Goal 6, target 6.C: have halted by 2015 and begun to reverse the incidence of malaria and other major diseases. Given that malaria accounted for 7 per cent of post-neonatal child deaths globally in 2010 and for 15 per cent of such deaths in Africa, it is also central to achieving Goal 4, target 4.A: reduce by two thirds, between 1990 and 2015, the under-5 mortality rate. Malaria control is also expected to contribute to the achievement of Goals 1-3, 5 and 8.

9. By adopting the Abuja Declaration on Roll Back Malaria in Africa, and its plan of action, in April 2000, leaders of malaria-endemic countries in Africa committed themselves to halving malaria mortality by 2010, later extending the target to 2015. The Declaration also contained a commitment to reducing or waiving taxes and tariffs on imported antimalarial medicines, insecticide-treated bednets and other essential malaria commodities. In 2006, the Declaration was complemented by the Abuja call for accelerated action towards universal access to HIV and AIDS, tuberculosis and malaria services in Africa.

10. In 2005, the World Health Assembly adopted a resolution in which it set a target of reducing the malaria burden by 50 per cent by 2010 and by 75 per cent between 2000 and 2015. In 2007, the Assembly passed another resolution in which it instituted World Malaria Day on 25 April every year, the day on which African Union countries have commemorated Africa Malaria Control Day since 2001. The Assembly also called upon member States to halt the provision of oral artemisinin-based monotherapies. In its resolution on malaria adopted in 2011, the Assembly reiterated the importance of taking a comprehensive set of actions to ensure achievement of the 2015 targets and called for increased efforts to control emerging resistance to antimalarial drugs and insecticides. It also called upon member States

to keep malaria high on political and development agendas and to undertake strategic reviews of national malaria programmes to optimize national responses.

11. Under the umbrella of the Roll Back Malaria Partnership, endemic countries, organizations of the United Nations system, bilateral donors, public-private partnerships, scientific organizations, academic institutions, non-governmental organizations and the private sector are working together to scale up WHO-recommended interventions, improve strategic planning and malaria programme management and seek to ensure that predictable and adequate funding is in place for malaria control. The Global Malaria Action Plan, released in 2008, was developed collectively to accelerate the global multi-stakeholder effort to control and eliminate the disease. Its objectives and targets were revised in 2011.

II. Current situation

12. While falling short of the estimated $5.1 billion required annually to achieve universal coverage of malaria interventions around the world, the financing provided between 2000 and 2010 for malaria control has enabled endemic countries to greatly increase access to preventive interventions and diagnostic and treatment services, allowing them to reduce the estimated global malaria mortality rate by more than 25 per cent globally and by 33 per cent in the WHO African region during the same period.

13. The disease continues to inflict a heavy burden on sub-Saharan African countries, however, leading to tragic loss of life and impeding economic and social progress. Country-level malaria estimates available for 2010 show that 80 per cent of estimated malaria deaths occur in 14 of the 99 countries with ongoing transmission. Together, the Democratic Republic of the Congo and Nigeria account for more than 40 per cent of the estimated global total of malaria deaths. Côte d'Ivoire, Mozambique, Uganda and the United Republic of Tanzania are also highly affected. Those six countries account for an estimated 103 million (or 47 per cent) of the global malaria cases. In South-East Asia, the second most affected part of the world, India has the highest malaria burden, followed by Indonesia and Myanmar.

14. In the *World Malaria Report 2012*, WHO painted a mixed picture of global malaria trends, warning both about a slowdown in progress owing to shortfalls in financing and the possibility of malaria resurgences in areas in which the disease had previously been controlled. WHO also highlighted the two main biological threats that could significantly set back the global effort to control malaria: emerging parasite resistance in South-East Asia to artemisinin, the key compound in the WHO-recommended first-line treatment for uncomplicated *Plasmodium falciparum* malaria, and growing mosquito resistance to insecticides, which threatens vector control efforts.

Vector control

15. Interventions to control *Anopheles* mosquitoes, which are responsible for malaria transmission to humans, have been critical in reducing or interrupting disease transmission, in particular in areas that are highly prone to malaria. Indoor residual spraying and the use of insecticide-treated nets, whether conventional nets

or long-lasting insecticidal nets, are the two core, broadly applicable malaria vector control measures.[1]

16. By 2011, 78 countries, including 32 in Africa, had adopted the WHO recommendation to provide insecticide-treated nets to all persons at risk of malaria. A total of 89 countries, including 39 in Africa, had a national policy to distribute such nets free of charge, resulting in a major expansion in access. According to the latest available data, 53 per cent of households in sub-Saharan Africa own at least one bednet. In 2012, an estimated 33 per cent of the population at risk, and 41 per cent of children under 5 years of age, were sleeping under a bednet in sub-Saharan Africa. Behaviour change communication campaigns are essential to improving bednet utilization. UNICEF and other partners are heavily involved in these efforts.

17. Every year, an estimated 150 million new insecticide-treated nets are needed to protect all populations at risk of malaria in endemic countries of sub-Saharan Africa. In 2011, however, only 92 million nets were delivered to those countries and, by 2012, the number had fallen to an estimated 66 million. According to analysis conducted by the African Leaders Malaria Alliance, as a result of the slowdown 13 countries in Africa saw a decrease in their operational insecticide-treated net coverage in the second half of 2012, leaving their populations at increased risk of malaria. The slowdown has multiple causes, with the key drivers thought to be the slow pace of implementation of projects financed by the Global Fund and the cancellation of the Fund's eleventh round of grants.

18. WHO and Roll Back Malaria partners, deeply concerned about this development, have called for urgent action to put in place the necessary financing and to speed up bednet procurement. Malaria partners globally are working with endemic countries to facilitate the disbursement of existing resources for vector control interventions and to mobilize additional resources. Roll Back Malaria partners are also exploring ways to improve the durability of insecticide-treated nets and to open up new delivery channels. Efforts are under way to track bottlenecks in all countries, especially the highest-burden countries of Africa. Unless deliveries are massively increased in 2013 and 2014, endemic countries will be unable to fully replace all expiring nets and will experience increases in malaria cases and deaths.

19. Indoor residual spraying is a powerful vector control tool for reducing and interrupting malaria transmission. In 2011, 80 countries, including 38 in the WHO African region, recommended indoor spraying for malaria control. Around the world, indoor spraying programmes protected 153 million people, or 5 per cent of the global population at risk, in 2011. In the WHO African region, the proportion of the at-risk population that was protected rose from less than 5 per cent in 2005 to 11 per cent in 2010 and remained at that level in 2011, benefiting 77 million people. The most recent data received from endemic countries and malaria control partners show that progress in the roll-out of indoor spraying programmes has recently slowed.

20. While existing vector control tools remain effective, the emergence of mosquito resistance to insecticides in 64 countries, including in most endemic countries in Africa, presents a major threat to malaria control efforts around the

[1] Although WHO recommends the use of long-lasting insecticidal nets, given the widespread continued use of conventional insecticide-treated nets, especially outside Africa, the more generic term "insecticide-treated nets" is used when referring to bednets herein.

world. As requested by the World Health Assembly and the Roll Back Malaria Partnership Board, WHO published a global plan for insecticide resistance management in malaria vectors in May 2012, calling upon Governments, development partners, organizations of the United Nations system and research and industry partners to tackle the growing threat. While several countries have taken action, most have not yet developed a focused insecticide resistance management strategy or established adequate routine surveillance systems, owing to a lack of financial resources and entomologic capacity.

21. Recently, WHO has noted the expansion of larviciding activities in some sub-Saharan African countries. WHO recommends larviciding in sub-Saharan Africa only as a complementary intervention, rather than as a core vector control intervention. It should be used only in areas in which mosquito breeding sites are few, fixed and findable. Larviciding can be a useful and cost-effective intervention in urban and peri-urban areas, but is generally not recommended for rural areas in which mosquito breeding sites are innumerable, shifting and widely dispersed. In April 2012, WHO issued a position statement on larviciding to guide countries in the appropriate implementation of this intervention, reiterating the potential negative health and environmental impacts of using larval products that have not been recommended by the WHO Pesticide Evaluation Scheme.

Preventive therapies

22. Preventive chemotherapies are key elements of the comprehensive package of malaria prevention and control measures recommended by WHO. Recommended preventive therapies include intermittent preventive treatment of pregnant women, intermittent preventive treatment of infants and seasonal malaria chemoprevention.

23. Intermittent preventive treatment of pregnant women should be given at routine antenatal visits in areas with moderate-to-high malaria transmission in sub-Saharan Africa. Intermittent preventive treatment of infants should be delivered through immunization services in the same areas. The uptake and national roll-out of these two interventions, in particular the latter, has been somewhat slower than expected. Seasonal malaria chemoprevention is recommended for administration to children under 5 years of age during the malaria season in areas of highly seasonal malaria transmission throughout the Sahel.

24. An estimated 32 million pregnant women could benefit from intermittent preventive treatment each year in endemic countries in sub-Saharan Africa. In high-burden countries, implementation of this intervention noticeably lags behind other malaria control measures, the relatively good levels of antenatal clinic attendance notwithstanding. Health worker training and simplified intermittent preventive treatment messages have been shown to improve coverage. To facilitate these efforts, WHO updated its intermittent preventive treatment recommendation in October 2012 and now recommends administration at each scheduled antenatal care visit. WHO recommends a schedule of four antenatal care visits.

25. WHO recommends that intermittent preventive treatment of infants be administered through immunization services at defined intervals corresponding to routine vaccination schedules. Because the treatment uses routine immunization as its delivery platform, coverage could be swiftly increased and impact rapidly achieved. Administration is safe, simple, cost-effective and well accepted by health workers and communities. An estimated 28 million infants born each year could

benefit from this preventive therapy. Only Burkina Faso has adopted intermittent preventive treatment of infants as national policy since the WHO recommendation was issued in 2009.

26. Throughout the Sahel, most childhood malaria morbidity and mortality occurs during the rainy season, which is generally short (between three and four months). Giving effective malaria treatment at monthly intervals during this period has been shown to offer 75 per cent protection against uncomplicated and severe malaria in children under 5 years of age. Seasonal malaria chemoprevention is a cost-effective and safe therapy that can be administered by community health workers. An estimated 25 million children aged between 3 and 59 months could benefit from this preventive therapy every year. The WHO seasonal malaria chemoprevention recommendation was issued in March 2012 and two countries have adopted the policy to date. Several others, which had been involved in the evaluation of the policy, have indicated a commitment to expanding seasonal malaria chemoprevention coverage beyond their study populations.

Diagnostic testing

27. Early and accurate diagnosis of malaria is essential for effective disease management and malaria surveillance. WHO recommends prompt parasitological confirmation of suspected malaria either by microscopy or malaria rapid diagnostic test in all patients with suspected malaria before treatment is administered. Implementation of universal diagnostic testing in the public and private sectors would substantially reduce global requirements for antimalarial treatment. Diagnostic testing also provides better patient care, is essential for timely and accurate surveillance and helps to reduce the emergence and spread of drug resistance by reserving antimalarials for those who actually have malaria.

28. Recent years have witnessed a sharp increase in the number of countries that have adopted and implemented expanded policies for malaria diagnostic testing. By 2011, 87 endemic countries, including 41 in the WHO African region, had adopted a policy of providing parasitological diagnosis for all age groups. Malaria diagnostic testing is provided free of charge in the public sector in 84 countries. These policy decisions have led to substantial progress in scaling up diagnostic testing in endemic countries and a gradual expansion at the community level.

29. The proportion of suspected malaria cases receiving a diagnostic test in the public sector increased from 20 per cent in 2005 to 47 per cent in 2011 in the WHO African region and from 68 to 77 per cent globally. In the WHO African region, most of the increase is attributable to an expansion in the use of rapid diagnostic tests, which accounted for 40 per cent of all cases tested in the region in 2011. Globally, the number of rapid diagnostic tests supplied by manufacturers almost doubled within a year, from 88 million in 2010 to 155 million in 2011. That increase notwithstanding, most fever cases continue to be treated presumptively. In the WHO African region, the total number of diagnostic tests (both microscopy and rapid diagnostic tests) was less than half the number of artemisinin-based combination therapies distributed by national malaria control programmes in 2011.

Antimalarial treatment

30. Artemisinin-based combination therapies are recommended by WHO as the first-line treatment for malaria caused by *P. falciparum*, the most dangerous of the

Plasmodium parasites that infect humans. By 2011, 79 countries and territories had adopted such therapies as first-line treatment for *P. falciparum* malaria. Since 2011, WHO has recommended that all patients with severe malaria be treated with injectable artesunate (intramuscular or intravenous), followed by a complete course of an artemisinin-based combination therapy as soon as the patient can take oral medicines. *P. vivax* malaria should be treated with chloroquine where it is effective or with an appropriate artemisinin-based combination therapy in areas in which *P. vivax* is resistant to chloroquine. Treatment of *P. vivax* should be combined with a 14-day course of primaquine to prevent relapse.

31. Recent years have witnessed a further expansion in deliveries of artemisinin-based combination therapy to endemic countries. The number of treatment courses delivered to the public and private sectors globally increased from 187 million in 2010 to 278 million in 2011. Increases in procurement during this period were primarily in the private sector and occurred in large part through the Affordable Medicines Facility for Malaria, an initiative managed by the Global Fund. The increase in deliveries globally notwithstanding, several countries continued to face public sector stock-outs during the course of 2011 owing to persisting problems in procurement and supply chain management.

32. Late in 2011, an inter-agency task force was set up to identify potential causes of artemisinin-based combination therapy and rapid diagnostic test stock-outs in the public sector and to promote mitigating actions. Coordinated by WHO, it comprised the African Leaders Malaria Alliance, the Clinton Health Access Initiative, the Global Fund, the President's Malaria Initiative (launched by the President of the United States), the United Nations Development Programme and UNICEF. Task force interventions included negotiations to release delayed donor funding, placing new orders, expediting deliveries with manufacturers, splitting deliveries to address temporary shortfalls and facilitating the movement of surplus stocks. As a result of the inter-agency effort, artemisinin-based combination therapy stock-outs were averted in 17 countries in 2012.

33. The widespread practice of using oral artemisinin-based monotherapies, which are less expensive to produce and purchase, has posed a major risk to malaria control efforts and contributed to the emergence of artemisinin resistance. WHO recommends that oral artemisinin-based monotherapies be withdrawn from markets and replaced with artemisinin-based combination therapies, a policy repeatedly endorsed by the World Health Assembly since 2007. According to the most recent assessment by WHO (March 2013), oral artemisinin-based monotherapies continue to be marketed by at least 31 companies, mostly based in India and Africa. Globally, 43 countries have withdrawn marketing authorization for oral artemisinin-based monotherapies, but 15 continue to allow their marketing, including 9 in Africa.

34. The year 2012 saw a significant increase in the choice of WHO pre-qualified antimalarial medicines. Of the 28 antimalarial pharmaceutical products currently on the list of pre-qualified medicines, 10 were pre-qualified in 2012. WHO also pre-qualified 12 new active pharmaceutical ingredients for use in the manufacture of antimalarial medicines. This substantial increase is expected to translate into increased competition, which in turn will reduce the price of medicines. A benefit of reduced prices will be less incentive to purchase cheaper non-pre-qualified medicines, which tend to be of lower quality. WHO is also working to increase medicine quality testing capacity in malaria-endemic regions.

Integrated community case management

35. WHO and UNICEF have increased efforts to support endemic countries in Africa to scale up integrated community case management. As part of such management, community health workers are trained, supplied and supervised to diagnose and treat children for malaria, pneumonia and diarrhoea. This equity-focused strategy aims to complement and extend the reach of public health services by providing timely and effective treatment of those diseases in rural areas with limited access to facility-based health-care providers, with a special focus on children under 5 years of age. In June 2012, WHO and UNICEF issued a joint statement on improving access to essential treatment services for children through integrated community case management. These efforts help to advance a campaign, launched by Columbia University and endorsed by the African Union, which aims to train and deploy, by 2015, 1 million community health workers in rural areas of sub-Saharan Africa.

Antimalarial drug resistance

36. In recent years, the emergence of artemisinin resistance in the Greater Mekong subregion of South-East Asia has presented a significant challenge to regional malaria control and elimination efforts. Parasite resistance to artemisinin, the key compound in the WHO-recommended first-line treatment for uncomplicated *P. falciparum* malaria, was first confirmed in Cambodia in 2008. Artemisinin-resistant parasites have since been detected in Myanmar, Thailand and Viet Nam and containment activities are under way in all affected countries. A further spread of malaria-resistant strains, or the independent emergence of artemisinin resistance in other regions, could disrupt global malaria control efforts.

37. The observed changes in the efficacy of the artemisinin component notwithstanding, artemisinin-based combination therapies continue to cure patients in this region, provided that the partner drug is efficacious. In Pailin Province, Cambodia, resistance has been found to both components of multiple artemisinin-based combination therapies. Accordingly, special provisions for directly observed therapy using a non-artemisinin-based combination (atovaquone-proguanil) have been put in place. Therapeutic efficacy studies remain the gold standard for guiding drug policy; WHO recommends that they be undertaken every two years. In 2010 and 2011, studies of first-line or second-line antimalarial treatments were completed in 47 of 71 countries in which *P. falciparum* efficacy studies were possible, an increase from 31 countries in 2008 and 2009.

38. Early in 2013, WHO finalized an emergency response framework to guide the multi-stakeholder effort to further scale up programmes to contain artemisinin resistance in the Greater Mekong subregion. A regional hub was established in Phnom Penh to provide an umbrella for the coordinated, high-impact delivery of targeted programmes to respond to country needs. The framework will be implemented by a consortium of endemic countries, organizations of the United Nations system and country-based malaria partners in the context of increasing regional political commitment to tackling the challenge of drug-resistant malaria. These efforts are built on the foundation of the Global Plan for Artemisinin Resistance Containment, which was launched by the Director General of WHO in 2011.

Surveillance

39. WHO urges malaria-endemic countries to strengthen their disease surveillance, health information and vital registration systems. The data generated through such systems are essential for evaluating and improving the effectiveness of health interventions. Owing to weaknesses in malaria surveillance systems, only 58 endemic countries currently produce sufficiently complete and consistent data on malaria to permit an assessment of trends. Those countries account for only 15 per cent of estimated cases worldwide. There is a critical need to strengthen malaria surveillance in the other 41 countries with ongoing malaria transmission to enable ministries of health to direct resources to populations most in need, respond effectively to disease outbreaks and assess the impact of control measures.

40. In 2012, WHO released two new operational manuals for malaria surveillance, one on disease surveillance for malaria control and the other on disease surveillance for malaria elimination. Those manuals, along with the manual for universal access to malaria diagnostic testing and the second edition of the *Guidelines for the Treatment of Malaria*, are the core WHO documents that underpin the initiative known as "T3: Test. Treat. Track", which urges, and provides tools for, malaria-endemic countries and global malaria partners to focus efforts on scaling up diagnostic testing, treatment and surveillance for malaria. The initiative and the surveillance manuals were launched in Namibia by the Director General of WHO in April 2012.

Policy-setting and new guidance from the World Health Organization

41. In 2011, WHO completed a major redesign of its policy-setting process for malaria control and elimination, resulting in the creation of a malaria policy advisory committee as an independent advisory group of leading malaria experts, enabling WHO to strengthen its policy-setting process and make it more transparent and responsive to the needs of member States. All recent WHO policy recommendations, including the new seasonal malaria chemoprevention policy, the updated policy for intermittent preventive treatment of pregnant women and the updated policy for single-dose primaquine as a gametocytocide for treatment of *P. falciparum* malaria in selected settings, were issued in line with the Committee's recommendations.

42. Since the previous progress report on malaria submitted to the General Assembly (A/66/169), and in addition to the policies and strategies mentioned earlier, WHO has also issued guidelines for procuring public health pesticides, draft interim recommendations on the sound management of packaging for long-lasting insecticidal nets, a handbook on the management of severe malaria, a position statement on the effectiveness of non-pharmaceutical forms of *Artemisia annua* against malaria and a field guide for the implementation of seasonal malaria chemoprevention. At its meeting in September 2012, the Committee requested the Global Malaria Programme to prepare a global technical strategy for malaria control and elimination for the period 2016-2025. The strategy will serve as the technical foundation for a revised version of the Global Malaria Action Plan of the Roll Back Malaria Partnership, which will be developed in the coming years.

Malaria vaccine development

43. The complexity of the malaria parasite makes development of a malaria vaccine an extremely difficult task. There is currently no commercially available malaria vaccine, the decades of intense research and development notwithstanding. The most advanced candidate vaccine against *P. falciparum* is RTS,S/AS01. Its phase 3 trial, which began in May 2009, completed enrolment of 15,460 children in seven countries in sub-Saharan Africa. Two age groups are enrolled in the trial: children aged between 5 and 17 months at first dose receiving only the RTS,S/AS01 vaccine and children aged between 6 and 12 weeks at first dose who receive the same malaria vaccine in co-administration with pentavalent vaccines in the routine immunization schedule. Depending on the full trial results, expected in 2014, and on regulatory submission timings, the first WHO policy recommendations on this malaria vaccine are expected late in 2015.

Strategic planning and capacity-building

44. In 2012, global malaria partners provided support to endemic countries in the strengthening of malaria control and elimination programmes, including the conduct of national malaria programme reviews following WHO technical guidance. These reviews serve as the basis for renewing national malaria strategic plans, for which the WHO Regional Office for Africa has issued draft guidance. Roll Back Malaria partners also collaborated with endemic countries on the development of country programmatic and gap analyses and road maps. Roll Back Malaria subregional networks facilitated a coordinated response to urgent country needs, including by unblocking delayed financing.

45. WHO and Roll Back Malaria partners also ran a series of international and regional malaria training courses for programme managers and staff in national and subnational malaria control programmes, including on planning and management of malaria control interventions; malaria surveillance, monitoring and evaluation; malaria elimination; and monitoring antimalarial drug resistance. Through training courses in 2011 and 2012, more than 230 malaria programme managers and health professionals were trained in the WHO African, Eastern Mediterranean and European regions. WHO is currently developing a series of new training materials tailored to the needs of countries with varying degrees of malaria endemicity.

Malaria elimination

46. The global malaria community continued to provide tailored support to countries nearing elimination. Currently, 25 malaria-endemic countries are en route to eliminating malaria and many more have declared malaria elimination as a national goal. In recent years, Armenia, Morocco, Turkmenistan and the United Arab Emirates have been certified as free of malaria by WHO.

47. Cross-border collaboration, the sharing of best practices, improvements in diagnostic tools and strong regional, intercountry and district-level efforts are essential to sustaining progress in countries advancing towards elimination, such as the signatories to the Tashkent Declaration in the WHO European region, in addition to the countries of the Southern African Development Community, Asia and the Pacific, the Arabian Peninsula and Mesoamerica. Investments in these efforts have already resulted in an accelerated decline in malaria burden and increased capacity

to prevent the reintroduction of malaria into areas in which transmission has been interrupted.

48. In countries in which malaria is limited to remote, forested areas, malaria cases among migrants and mobile populations often represent a high percentage of the total number of cases. In such countries, progress towards malaria elimination will require improved access to health services for those groups and strong cross-border and regional collaboration.

Global advocacy

49. Global malaria partners continued to work with national and global leaders to build political commitment to urgent action to reduce the malaria burden around the world. African Heads of State continued to convene twice a year for the African Leaders Malaria Alliance Forum, held during the summit of the African Union, to reaffirm their commitment to defeating malaria. In February 2013, 13 countries received awards from the Alliance for their progress in efforts to combat the disease. In December 2012, the President of Liberia, Ellen Johnson-Sirleaf, who is currently chairing the Alliance, hosted an event in Monrovia to launch the *World Malaria Report 2012* and the report of the WHO Commission on Women's Health in the African Region on addressing the challenge of women's health in Africa, further underscoring strong African commitment to combating the disease.

50. Growing international momentum around child and maternal health culminated in the Child Survival: Call to Action high-level forum, held in Washington, D.C., in June 2012, convened by the Governments of Ethiopia, India and the United States, in collaboration with UNICEF. The conference led to the birth of the "A promise renewed" initiative, which has been endorsed by more than 160 Governments and has triggered new commitments to strengthen health service delivery mechanisms in malaria-endemic countries. For example, the President of Nigeria, Goodluck Ebele Jonathan, launched an initiative to save 1 million lives by 2015 through the scaling up of access to essential primary health services and commodities for women and children.

51. Political momentum has also been building in Asia and the Pacific. The Government of Australia hosted a high-level malaria summit from 31 October to 2 November 2012, co-chaired by the Special Envoy for Malaria and supported by WHO, the Roll Back Malaria Partnership and other global partners. The outcome adopted, a "consensus on malaria control and elimination in the Asia-Pacific", included a call to create a malaria alliance of leaders in the region. This was followed by the adoption, at the seventh East Asia Summit, held on 20 November 2012 in Cambodia, of a declaration on regional responses to malaria control and addressing resistance to antimalarial medicines. WHO and the Roll Back Malaria Partnership released a report focusing on malaria outside Africa, which followed several other country and thematic reports published in the Partnership's "Progress and Impact" series.

52. Instituted by the World Health Assembly in 2007, World Malaria Day 2012 was observed by member States, organizations of the United Nations system, global development partners, non-governmental organizations and the private sector to raise public awareness of global efforts to control malaria and the importance of accelerating progress towards the Millennium Development Goals. Its theme was "Sustain gains, save lives: invest in malaria". The Secretary-General presented an

award to the Roll Back Malaria Partnership goodwill ambassador, Princess Astrid of Belgium, for her efforts to raise awareness about the suffering caused by malaria. The campaign for World Malaria Day 2013 has been devised as a multi-year campaign and is running under the umbrella theme "Invest in the future: defeat malaria".

III. Urgent funding needs for global malaria control

53. Global resource requirements to achieve universal coverage of malaria interventions were estimated in the Global Malaria Action Plan to exceed $5.1 billion per year between 2011 and 2020 ($2.3 billion per year in Africa). While international disbursements expanded eightfold between 2004 and 2011, available funding remains substantially less than the amount needed to achieve universal coverage of malaria interventions and reach the global malaria targets.

54. International financing for malaria totalled $1.66 billion in 2011 and $1.84 billion in 2012. Domestic financing for malaria control and elimination has shown a gradual rise. It was estimated to be $625 million in 2011, with endemic countries in Africa and South America committing most resources. Combining both domestic and international funds, the resources available for malaria control globally were estimated to be $2.3 billion in 2011, leaving a gap of $2.8 billion. On the basis of country-level analysis, the funding gap for malaria commodities and their distribution for the period 2013-2015 is $3.6 billion for Africa alone.

55. There is thus an urgent need to identify new funding sources, both international and domestic, to accelerate progress towards global targets and prevent disease outbreaks. The Special Envoy for Malaria, whose role was expanded to include the financing of the Millennium Development Goals relating to health in March 2013, has taken the lead in developing innovative financing mechanisms to create more stable and predictable malaria financing. Roll Back Malaria partners are also exploring a malaria bond, which could generate funding for malaria interventions, together with additional options such as guarantee mechanisms to optimize timing of funding. Efforts are also under way to explore revenue generation mechanisms, including taxes on airline tickets and financial transactions to co-finance development assistance.

56. Under the umbrella of the Roll Back Malaria Partnership, global malaria partners convened two high-level meetings, in 2012 and 2013, to conduct comprehensive programmatic gap analyses and identify the most urgent operational challenges in endemic countries. The meetings were attended by representatives of more than 40 Governments and development partners, organizations of the United Nations system and the private sector. Gap analysis projections were later presented to ministers of finance to encourage new national commitments to increased domestic resources to combat the disease. At its meeting in December 2012, the Roll Back Malaria Partnership Board called for urgent action to address the dire funding situation of eight countries in sub-Saharan Africa.

57. In 2012, the Global Fund underwent a major reform and restructuring process, which led to the development of a new funding model that will move away from the round-based system and give malaria-endemic countries more flexibility with regard to aligning funding with national malaria control strategies, which should provide greater funding predictability for countries. As from 2014, the Global Fund will

focus more strongly on countries with the highest burden of disease and the least ability to provide domestic financing, ensuring greater equity in access to international funds. A separate resource envelope will be created to reward high-impact, well-performing programmes.

58. Given that some 60 per cent of all international funding for malaria has previously been disbursed by the Global Fund, it is critical to maintain high-level donor commitment and ensure that the Global Fund remains a major source of strategic investment in efforts to combat HIV/AIDS, tuberculosis and malaria. The next replenishment of the Global Fund, scheduled for September 2013, will be critical to the future success of malaria control and to protecting the gains achieved.

IV. Progress towards global goals and targets

59. The success of efforts to control and eliminate malaria is measured through progress made towards a set of 2015 targets, which have been designed through intergovernmental processes or set in the context of global initiatives. Progress towards the targets is summarized each year by WHO in the *World Malaria Report*, which provides a comprehensive overview of trends in programme financing, intervention coverage and malaria cases and deaths. Data for the report are received from national malaria control programmes in endemic countries, via WHO regional offices, and are complemented by information received through household surveys, notably demographic and health surveys, multiple indicator cluster surveys and malaria indicator surveys.

60. Assessing progress towards country-specific burden reduction targets has been challenging, given that surveillance systems in high-burden countries in sub-Saharan Africa detect only a fraction of the actual malaria cases and deaths. With a global detection rate of 10 per cent, malaria is one of the least trackable infectious diseases in sub-Saharan Africa. In 41 malaria-endemic countries around the world, including 32 in Africa, an assessment of malaria trends can be made only by using burden estimation methods that rely on a modelled relationship between malaria transmission, intervention coverage and case incidence or mortality.

Millennium Development Goal 6

61. Malaria prevention and control has formed part of Millennium Development Goal 6, target 6.C: have halted by 2015 and begun to reverse the incidence of malaria and other major diseases. Changes in global malaria incidence and mortality rates between 2000 and 2010 suggest that the world is on track to reach this target. Between 2000 and 2010, malaria incidence rates, which take into account population growth, were reduced by 17 per cent globally and by 23 per cent in Africa. The malaria mortality rate decreased by more than 25 per cent worldwide during the same period, while the decline in Africa was 33 per cent. This progress can be sustained only if interventions continue to be scaled up, robust control operations are implemented in all high-burden countries and resurgences and outbreaks are prevented, however. The coming few years will be critical to ensuring that both funding and political commitment are sufficient to keep efforts to combat malaria on the right course.

62. Progress towards the target is also monitored through an analysis of population coverage with prevention and treatment interventions, in particular the use of

insecticide-treated nets and the percentage of cases that are treated with an artemisinin-based combination therapy. While universal coverage continues to remain a distant target for most countries, the past few years have witnessed a major expansion of access to both insecticide-treated nets and artemisinin-based combination therapies.

63. Trends in bednet delivery in sub-Saharan Africa show that the numbers of bednets delivered by manufacturers increased dramatically from 6 million in 2004 to 145 million in 2010. As mentioned above, this increase has translated into an expanding coverage of at-risk populations with bednets. The proportion of households in sub-Saharan Africa owning at least one insecticide-treated net reached 53 per cent in 2011. Meanwhile, the proportion of the at-risk population sleeping under a bednet was 33 per cent in 2012, while the proportion of children under 5 years of age doing so was slightly higher, at 41 per cent.

64. While artemisinin-based combination therapy sales have expanded substantially around the world, reliable data about the utilization of these antimalarials in the public and private sectors are not available. On the basis of endemic country data on artemisinin-based combination therapy distribution and the estimated number of *P. falciparum* cases at public facilities, WHO produces estimates regarding the proportion of cases receiving such treatment in public health facilities. According to these estimates, countries in the WHO Americas, European, Eastern Mediterranean and Western Pacific regions procured and distributed sufficient artemisinin-based combination therapies to be able to treat all *P. falciparum* cases in 2011. Meanwhile, countries in South-East Asia could treat only 73 per cent of their confirmed cases and countries in Africa only 55 per cent.

Abuja targets

65. By adopting the Abuja Declaration on Roll Back Malaria in Africa, and its plan of action, in April 2000, leaders of malaria-endemic countries in Africa committed themselves to halving malaria mortality by 2010, later extending the target to 2015. The Declaration also contained a commitment to reducing or waiving taxes and tariffs on imported antimalarial medicines, insecticide-treated bednets and other essential malaria commodities. The African Leaders Malaria Alliance, in collaboration with WHO and the Roll Back Malaria Partnership, produces a quarterly scorecard tracking progress against a set number of indicators in all malaria-endemic countries in Africa.

66. According to the most recent scorecard (January 2013), 28 countries have made progress towards removing tariffs on all antimalarial commodities, but only 10 are on track to fully remove them by 2015. Taxes and tariffs on insecticide-treated nets and rapid diagnostic tests have been removed in more than 20 countries in sub-Saharan Africa, while more than 30 countries have abolished taxes and tariffs on antimalarial medicines.

67. According to the *World Malaria Report 2012*, 11 malaria-endemic countries and one area in sub-Saharan Africa are on track to meet the target of reducing the malaria burden by more than 50 per cent by 2015. Progress towards this target is measured through an analysis of trends in malaria incidence rates. Eight countries (Algeria, Botswana, Cape Verde, Namibia, Rwanda, Sao Tome and Principe, South Africa and Swaziland) and one area (Zanzibar) have already reached this target, having reduced their malaria incidence rates by more than 75 per cent. Eritrea has

reduced its malaria incidence rate by more than half, while Madagascar and Zambia are projected to reach this target by 2015. In other African countries, it is currently not possible to assess trends in malaria incidence owing to incompleteness or inconsistency in reporting.

World Health Assembly targets

68. In 2005, the World Health Assembly set the target of reducing the malaria burden by 50 per cent between 2000 and 2010 and by 75 per cent by 2015. According to the *World Malaria Report 2012*, 50 of the 99 countries and territories with ongoing malaria transmission are on track to achieve a 75 per cent reduction in their incidence rates by 2015. Eight of those countries and one area are in the WHO African region. While that reduction represents tremendous progress, those countries account for only 3 per cent (or 7 million) of the malaria cases that are estimated to occur around the world. Globally, malaria incidence rates were reduced by 17 per cent between 2000 and 2010, while the decline in Africa was 23 per cent. To achieve swifter progress towards this target, efforts need to be substantially expanded in the 17 highest-burden countries, which account for an estimated 80 per cent of malaria cases.

Global Malaria Action Plan goals

69. The Global Malaria Action Plan was launched in 2008 as part of a global advocacy drive to catalyse support for malaria control and elimination and to rally partners around a common plan of action to combat the disease. The objectives of the Plan, as revised in 2011, are to reduce global malaria deaths to near zero by the end of 2015, to reduce global malaria cases by 75 per cent by the end of 2015 and to eliminate malaria by 2015 in at least 8 to 10 new countries (since 2008) and in the WHO European region. The Roll Back Malaria Partnership called for an estimated $5.1 billion annually to ensure universal coverage of malaria interventions and achieve the ambitious targets. As mentioned above, those funding targets could not be fully achieved, partly because of the decrease in available global health and development funding triggered by the global financial crisis.

70. As the figures cited above have shown, there has been steady progress towards all these ambitious goals. To move closer to attaining the first two goals, however, an urgent and significant expansion of malaria financing will be required, in particular in the highest-burden countries. With regard to the third goal, eight new countries (within and outside the WHO European region) have reduced local malaria transmission to zero since 2008 (the Bahamas, Georgia, Iraq, Jamaica, Kyrgyzstan, the Russian Federation, the Syrian Arab Republic and Uzbekistan) and three others have been certified as free of malaria since 2008 (Armenia, Morocco and Turkmenistan). The WHO European region is generally on track to reduce local malaria cases to zero by 2015, but additional efforts are needed to contain recent outbreaks in Greece and Turkey.

71. To accelerate progress in the highest-burden countries in Africa, the African Leaders Malaria Alliance, the International Federation of Red Cross and Red Crescent Societies, the Office of the Special Envoy for Malaria, the Roll Back Malaria Partnership and WHO are working together on setting up a malaria situation room. This unprecedented collaboration will allow participating organizations to track endemic country challenges in real time to prevent stock-outs of commodities,

resolve bottlenecks and facilitate a response to country requests for technical assistance. The focus will be on Burkina Faso, Cameroon, Côte d'Ivoire, the Democratic Republic of the Congo, Ghana, Mozambique, the Niger, Nigeria, Uganda and the United Republic of Tanzania.

V. Recommendations

72. **Member States are urged to step up efforts towards attaining global malaria targets and address the priority actions highlighted by the General Assembly in its resolution 66/289. It is imperative that they maintain a high level of political commitment to reducing the suffering and loss of life caused by malaria. Malaria control and elimination should remain a key priority for global health and development beyond 2015, with more focused attention on health system strengthening and human capacity development, enabling malaria-endemic countries to improve their overall response to the challenges posed by infectious diseases.**

73. **There is an urgent need to increase the availability of financing for malaria control through both traditional and innovative financing tools to alleviate suffering in the 17 highest-burden countries, which account for an estimated 80 per cent of malaria cases. Only through dramatic scale-up of interventions and sustaining of coverage can Africa's worst-affected countries prevent malaria resurgences and move closer towards achieving global targets. Adequate and predictable financing is essential if the gains achieved in malaria control and elimination over the past decade are to be protected.**

74. **Endemic countries are urged to maintain and, if possible, increase the domestic resources that they make available to combat malaria. It is also recommended that they strengthen strategic planning processes and national operational plans, in line with WHO technical recommendations, and integrate those with national health sector and development plans. National malaria strategies will be used to inform funding allocation decisions by the Global Fund under its new funding model. It is also recommended that endemic countries increasingly adopt a multi-sectoral approach to malaria control and address the social determinants of health with a view to reducing health inequities, as called for in the Rio Political Declaration on Social Determinants of Health, adopted in October 2011, and General Assembly resolution 67/81, on global health and foreign policy.**

75. **Endemic countries should make a concerted effort to put in place mechanisms and devise strategies to achieve universal coverage of malaria interventions. The expansion of malaria interventions can be used as an entry point for strengthening health systems, including laboratory services and maternal and child health services at peripheral health facilities, and to build stronger health information and infectious disease surveillance systems. A further scale-up of integrated community case management in the highest-burden countries would be a cost-effective solution to help to bridge systems gaps until health infrastructures are further strengthened.**

76. **Endemic countries are also urged to continue efforts to combat emerging biological threats to malaria control. Drug resistance should be prevented through the implementation of WHO recommendations in the Global Plan for**

Artemisinin Resistance Containment and through scale-up of containment programmes in countries in which resistance has been confirmed or is suspected. Strong political commitment is required to launch a coordinated and renewed effort to phase out the use of oral artemisinin-based monotherapies and to remove from markets antimalarial medicines not meeting WHO pre-qualification standards. The further spread of insecticide resistance should be stopped through adoption of the recommendations in the Global Plan for Insecticide Resistance Management in Malaria Vectors.

77. **There is a critical need to strengthen malaria surveillance and data quality throughout Africa to enable ministries of health to direct financial resources to populations most in need, to respond effectively to disease outbreaks and to assess the impact of control measures. Mechanisms for country-based technical assistance coordination should also be strengthened to help malaria-endemic countries to translate WHO technical guidance into national strategies and action plans. Additional financing is needed to support the sharing and analysis of knowledge, health information and best practices to address urgent programmatic challenges, to improve monitoring and evaluation and to conduct regular financial planning and gap analysis. Further improvement in cross-border and regional collaboration is also imperative.**

78. **An effective global partnership under the umbrella of the Roll Back Malaria Partnership will continue to be fundamental to making further progress. Collaborative efforts should be expanded to facilitate the engagement of sectors other than the health sector to ensure a genuine multi-sectoral and whole-of-government response to the complex challenges posed by malaria. Lastly, the contributions of the scientific community and the private sector remain essential: new products such as improved diagnostic tools, efficacious medicines, an effective vaccine, new insecticides and more durable insecticide-treated nets are all fundamental to ensuring sustained progress in efforts to combat the disease. The remarkable progress against malaria can be maintained only through a concerted and focused multi-stakeholder effort, built on the foundation of global political commitment, continuous scientific advancement and vigorous innovation.**